

### ABSTRACT OF THE DISCLOSURE

The present invention is a rapid method of determining the concentration of the major components in a chemical stream. The present invention is also a simple, low cost, device of determining the in-situ concentration of the major components in a chemical stream. In particular, the present invention provides a useful method for simultaneously determining the concentrations of sodium hydroxide, sodium sulfide and sodium carbonate in aqueous kraft pulping liquors through use of an attenuated total reflectance (ATR) tunnel flow cell or optical probe capable of producing a ultraviolet absorbency spectrum over a wavelength of 190 to 300 nm. In addition, the present invention eliminates the need for manual sampling and dilution previously required to generate analyzable samples. The inventive method can be used in Kraft pulping operations to control white liquor causticizing efficiency, sulfate reduction efficiency in green liquor, oxidation efficiency for oxidized white liquor and the active and effective alkali charge to kraft pulping operations.

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